



# Instructions

Scrolling through a two-column document on-screen from the bottom of one column to the top of the next, and so on, can get very tedious.  Fortunately, "column threading" is automatic with this software. Here are the basic tools and techniques that you need to know to efficiently navigate through the columns in this document ...



1. Click on the hand tool in the button bar. 

2. Whenever the hand cursor is positioned over a column, the cursor changes to the "read article cursor",  and "Read Article" appears in the status bar to indicate that this text is part of an "article". *An article is a collection of columns selected by the editor that comprise one subject, like one of the articles on the front page of a newspaper. Each first-level section (1.1, 1.2, 1.3...) of the NTIA Manual has been defined as a separate article.* Click any part of the article to start reading at that point, or control-click to start at the beginning of the article. The cursor now changes to the follow-article cursor, and "Follow Article" appears in the status bar.



3. To page down, simply click the mouse, or use the scrollbar, or press the PageDown key. *You can keep track of where you are on the page if you're using the thumbnails-and-page view. In this view a selection rectangle moves over a thumbnail of the page as you scroll through the columns in the page view window.*



4. You can continue to click until you reach the end of the article. At the end of the article, the cursor changes to the end-article cursor, and "End Article" appears in the status bar. Click again to return to the page view displayed before you started reading the article. Click the fit page button.


5. If you want to exit before the end of the article...

- select any navigation method (but not Enter or Return)
- Go to another article or page
- Hold down Shift + Ctrl and click.



6. You can also select which article (NTIA Manual Section) to view by choosing “Articles...” from the View menu, and then selecting the article you want from the dialog box that appears. *You can keep this dialog box displayed so you can go from one article to another, or better yet, use the bookmarks method described in #7 below.*

7. The **best way** to select which article (NTIA Manual Section) to view is to switch to the “Bookmarks-and-Page” view, click  on the section name bookmark, **click with the hand cursor on the page**, then navigate with the hand tool as described in #1-5 above. Links to all of the sections are provided — as well as links to tables, figures, endnotes, and even these instructions.

8. To select text within a column, click the text selection tool, hold down the Control key, and drag to select the text you want to copy. 

## CHAPTER 6

## Definitions and Particulars of Assignments

## 6.1 DEFINITIONS

## 6.1.1 Special Terms (General)

Where a definition is followed by the parenthetical expression "(RR)," it is an indication the definition is in the ITU Radio Regulations.

**Accepted Interference:**<sup>1</sup> Interference at a higher level than that defined as permissible interference and which has been agreed upon between two or more administrations without prejudice to other administrations. (RR)

**Active Satellite:** A satellite carrying a station intended to transmit or retransmit radiocommunication signals. (RR)

**Active Sensor:** A measuring instrument in the Earth exploration-satellite service or in the space research service by means of which information is obtained by transmission and reception of radio waves. (RR)

**Administration:** Any governmental department or service responsible for discharging the obligations undertaken in the Constitution of the International Telecommunication Union, in the Convention of the International Telecommunication Union and in the Administrative Regulations. (RR)

**Aeronautical Advisory Station:** An aeronautical station used for advisory and civil defense communications primarily with private aircraft stations. Also called UNICOM Stations.

**Aeronautical Broadcast Station:** An aeronautical station which makes scheduled broadcasts of meteorological information and notices to airmen. (In certain instances, an aeronautical broadcast station may be placed on board a ship.)

**Aeronautical Earth Station:** An Earth Station in the fixed-satellite service, or, in some cases, in the aeronautical mobile-satellite service, located at a specified fixed point on land to provide a feeder link for the aeronautical mobile-satellite service. (RR)

**Aeronautical Fixed Service:** A radiocommunication service between specified fixed points provided primarily for the safety of air navigation and for the

regular, efficient and economical operation of air transport. (RR)

**Aeronautical Fixed Station:** A station in the aeronautical fixed service. (RR)

**Aeronautical Marker Beacon Station:** A radio-navigation land station in the aeronautical radionavigation service which employs a marker beacon.

**Aeronautical Mobile Service:** A mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radiobeacon stations may also participate in this service on designated distress and emergency frequencies. (RR)

**Aeronautical Mobile (OR)<sup>2</sup> Service:** An aeronautical mobile service intended for communications, including those relating to flight coordination, primarily outside national or international civil air routes. (RR)

**Aeronautical Mobile (R)<sup>3</sup> Service:** An aeronautical mobile service reserved for communications relating to safety and regularity of flight, primarily along national or international civil air routes. (RR)

**Aeronautical Mobile-Satellite Service:** A mobile-satellite service in which mobile earth stations are located on board aircraft; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service. (RR)

**Aeronautical Mobile-Satellite (OR)<sup>2</sup> Service:** An aeronautical mobile-satellite service intended for communications, including those relating to flight coordination, primarily outside national and international civil air routes. (RR)

**Aeronautical Mobile-Satellite (R)<sup>3</sup> Service:** An aeronautical mobile-satellite service reserved for communications relating to safety and regularity of flight, primarily along national or international civil air routes. (RR)

**Aeronautical Mobile-Satellite Space Station:** A space station in the aeronautical mobile-satellite service.

**Aeronautical Radiobeacon Station:** A radio-

beacon station in the aeronautical radionavigation service intended for the benefit of aircraft.

**Aeronautical Radionavigation-Satellite Earth Station:** An fixed earth station in the aeronautical radionavigation-satellite service.

**Aeronautical Radionavigation-Satellite Mobile Earth Station:** A mobile earth station in the aeronautical radionavigation-satellite service.

**Aeronautical Radionavigation-Satellite Service:** A radionavigation-satellite service in which earth stations are located on board aircraft. (RR)

**Aeronautical Radionavigation Service:** A radionavigation service intended for the benefit and for the safe operation of aircraft. (RR)

**Aeronautical Radionavigation-Satellite Space Station:** A space station in the aeronautical radionavigation-satellite service.

**Aeronautical Station:** A land station in the aeronautical mobile service. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea. (RR)

**Aeronautical Telemetry Land Station:** A telemetry land station used in the flight testing of manned or unmanned aircraft, missiles, or major components thereof.

**Aeronautical Telemetry Mobile Station:** A telemetry mobile station used for transmitting data directly related to the airborne testing of the vehicle (or major components), on which the station is installed.

**Aeronautical Utility Land Station:** A land station located at airdrome control towers and used for control of ground vehicles and aircraft on the ground at airdromes.

**Aeronautical Utility Mobile Station:** A mobile station used for communication at airdromes with the aeronautical utility land station, the airdrome control station, the FAA flight service station, ground vehicles, and aircraft on the ground. (All transmissions shall be subject to the control of the airdrome control station and shall be discontinued immediately when so requested by the airdrome control operators.)

**Aircraft Earth Station:** A mobile earth station in the aeronautical mobile-satellite service located on board an aircraft. (RR)

**Aircraft Station:** A mobile station in the aeronautical mobile service, other than a survival craft station, located on board an aircraft. (RR)

**Airdrome Control Station:** An aeronautical station providing communication between an airdrome control tower and aircraft.

**Allocation (of a frequency band):** Entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more (terrestrial or space) radiocommunication services or the radio astronomy service under specified conditions. This term shall also be applied to the frequency band concerned. (RR)

**Allotment (of a radio frequency or radio frequency channel):** Entry of a designated frequency channel in an agreed plan, adopted by a component conference, for use by one or more administrations for a terrestrial or space radiocommunication service in one or more identified countries or geographical areas and under specified conditions. (RR)

**Altimeter Station:** A radionavigation mobile station in the aeronautical radionavigation service which employs a radio altimeter.

**Altitude of the Apogee or of the Perigee:** The altitude of the apogee or perigee above a specified reference surface serving to represent the surface of the Earth. (RR)

**Amateur-Satellite Service:** A radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service. (RR)

**Amateur Service:** A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest. (RR)

**Amateur Station:** A station in the amateur service. (RR)

**ASDE:** A radiolocation device employed for airport surface surveillance.

**Assigned Frequency:** The center of the Frequency Band assigned to a station. (RR)

**Assigned Frequency Band:** The frequency band within which the emission of a station is authorized; the width of the band equals the necessary bandwidth plus twice the absolute value of the frequency tolerance. Where space stations are concerned, the assigned frequency band includes twice the maximum Doppler shift that may occur in relation to any point of the Earth's surface. (RR)

**Assignment (of a radio frequency or radio frequency channel):** Authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions. (RR)

**Authorized Bandwidth:** Authorized bandwidth is, for purposes of this Manual, the necessary bandwidth (bandwidth required for transmission and reception of intelligence) and does not include allowance for transmitter drift or Doppler shift.

**Aviation Instructional Station:** A land or mobile station in the aeronautical mobile service used for radiocommunications pertaining to instructions to students or pilots while actually operating aircraft or engaged in soaring activities.

**Base Earth Station:** An earth station in the fixed-satellite service or, in some cases, in the land mobile-satellite service, located at a specified fixed point or within a specified area on land to provide a feeder link for the land mobile-satellite service. (RR)

**Base Station:** A land station in the land mobile service. (RR)

**Bridge-to-Bridge Station:** A ship station operating in the port operations service in which messages are restricted to navigational communications and which is capable of operation from the ship's navigational bridge or, in the case of a dredge, from its main control station, operating on a frequency or frequencies in the 156-162 MHz band.

**Broadcasting-Satellite Service:** A radiocommunication service in which signals transmitted or retransmitted by space stations are intended for direct reception by the general public. In the broadcasting-satellite service, the term "direct reception" shall encompass both individual reception and community reception. (RR)

**Broadcasting-Satellite Space Station:** A space station in the broadcasting-satellite service (television).

**Broadcasting Service:** A radiocommunication service in which the transmissions are intended for direct reception by the general public. This service may include sound transmissions, television transmissions or other types of transmissions. (RR)

**Broadcasting Station:** A station in the broadcasting service. (RR)

**Carrier Power (of a radio transmitter):** The average power supplied to the antenna transmission

line by a transmitter during one radio frequency cycle taken under the condition of no modulation. (RR)

**Characteristic Frequency:** A frequency which can be easily identified and measured in a given emission. A carrier frequency may, for example, be designated as the characteristic frequency. (RR) (See also Reference Frequency.)

**Chip-Rate:** The rate of encoding.

**Class of Emission:** The set of characteristics of an emission, designated by standard symbols, e.g., type of modulation of the main carrier, modulating signal, type of information to be transmitted, and also if appropriate, any additional signal characteristics. (RR)

**Coast Earth Station:** An earth station in the fixed-satellite service or, in some cases, in the maritime mobile-satellite service, located at a specified fixed point on land to provide a feeder link for the maritime mobile-satellite service. (RR)

**Coast Station:** A land station in the maritime mobile service. (RR)

**Coded Squelch:** A system wherein radio receivers are equipped with devices which allow audio signals to appear at the receiver output only when a carrier modulated with a specific signal is received.

**Community Reception (in the broadcasting-satellite service):** The reception of emissions from a space station in the broadcasting-satellite service by receiving equipment, which in some cases may be complex and have antennae larger than those used for individual reception, and intended for use:

! by a group of the general public at one location; or

! through a distribution system covering a limited area. (RR)

**Conterminous United States:** The term "Conterminous United States" includes the 48 contiguous States and the District of Columbia. (See also definitions for "United States" and "United States and Possessions.")

**Coordination Area:** The area associated with an earth station outside of which a terrestrial station sharing the same frequency band neither causes nor is subject to interfering emissions greater than a permissible level. (RR)

**Coordination Contour:** The line enclosing the coordination area. (RR)

**Coordination Distance:** Distance on a given azimuth from an earth station beyond which a

terrestrial station sharing the same frequency band neither causes nor is subject to interfering emissions greater than a permissible level. (RR)

**Coordinated Universal Time (UTC):** Time scale, based on the second (IS), as defined in ITU-R recommendation ITU-R TF.460-4. For most practical purposes associated with the Radio Regulations, UTC is equivalent to mean solar time at the prime meridian (0° longitude), formerly expressed in GMT. (RR)

**Deep Space:** Space at distances from the Earth equal to or greater than  $2 \times 10^6$  kilometers. (RR)

**Direct Sequence Spread Spectrum:** A signal structuring technique utilizing a digital code sequence having a chip rate much higher than the information signal bit rate. Each information bit of a digital signal is transmitted as a pseudo-random sequence of chips.

**Distance Measuring Equipment (DME):** Equipment that ascertains the distance of an interrogator from a transponder by measuring the time of transmission to and from the transponder.

**Duplex Operation:** Operating method in which transmission is possible simultaneously in both directions of a telecommunication channel.<sup>4</sup> (RR)

**Earth Exploration-Satellite Earth Station:** An earth station in the Earth exploration-satellite service.

**Earth Exploration-Satellite Service:** A radio-communication service between earth stations and one or more space stations, which may include links between space stations, in which:

- ! information relating to the characteristics of the Earth and its natural phenomena including data relating to the state of the environment is obtained from active sensors or passive sensors on earth satellites;

- ! similar information is collected from airborne or earth-based platforms;

- ! such information may be distributed to earth stations within the system concerned;

- ! platform interrogation may be included.

This service may also include feeder links necessary for its operation. (RR)

**Earth Exploration-Satellite Space Station:** A space station in the Earth exploration-satellite service.

**Earth Station:** A station located either on the Earth's surface or within the major portion of the Earth's atmosphere and intended for communication:

- ! with one or more space stations; or

- ! with one or more stations of the same kind by

means of one or more reflecting satellites or other objects in space. (RR)

**Effective Antenna Gain Contour (of a steerable satellite beam):** An envelope of antenna gain contours resulting from moving the boresight of a steerable satellite beam along the limits of the effective boresight area. (RR)

**Effective Boresight Area (of a steerable satellite beam):** An area on the surface of the Earth within which the boresight of a steerable satellite beam is intended to be pointed. There may be more than one unconnected effective boresight area to which a single steerable satellite beam is intended to be pointed. (RR)

**Effective Monopole Radiated Power(e.m.r.p.) (in a given direction):** The product of the power supplied to the antenna and its gain relative to a short vertical antenna in a given direction. (RR)

**Effective Radiated Power (e.r.p.) (in a given direction):** The product of the power supplied to the antenna and its gain relative to a halfwave dipole in a given direction. (RR)

**Electromagnetic Compatibility (EMC):** Electromagnetic compatibility is the condition which prevails when telecommunications equipment is performing its individually designed function in a common electromagnetic environment without causing or suffering unacceptable degradation due to unintentional electromagnetic interference to or from other equipment in the same environment.

**Emergency locator transmitter (ELT):** A transmitter of an aircraft or survival craft actuated manually or automatically that is used as an alerting and locating aid for survival purposes.

**Emergency Position-Indicating Radiobeacon Station:** A station in the mobile service the emissions of which are intended to facilitate search and rescue operations. (RR)

**Emission:** Radiation produced, or the production of radiation, by a radio transmitting station. For example, the energy radiated by the local oscillator of a radio receiver would not be an emission but a radiation. (RR)

**Environmental Communications:** Communications in the maritime mobile service for the broadcast of information pertaining to the environmental conditions in which vessels operate, i.e., weather, sea conditions, time signals of a grade adequate for practi-

cal navigation, notices to mariners and hazards to navigation.

**Equivalent Isotropically Radiated Power (e.i.r.p.):** The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna (absolute or isotropic gain). (RR)

**Equivalent Satellite Link Noise Temperature:** The noise temperature referred to the output of the receiving antenna of the earth station corresponding to the radio frequency noise power which produces the total observed noise at the output of the satellite link excluding noise due to interference coming from satellite links using other satellites and from terrestrial systems. (RR)

**Expendable Launch Vehicle (ELV):** A booster rocket that can be used only once to launch a payload, such as a missile or space vehicle.

**Experimental Composite Station:** An experimental station used in experimental operations of a complex nature not readily specified or used in operation which is a composite of two or more of the established experimental categories.

**Experimental Contract Developmental Station:** An experimental station used for the evaluation or testing under Government contract of electronics equipment or systems in a design or development stage.

**Experimental Developmental Station:** An experimental station used for evaluation or testing of electronics equipment or systems in a design or development stage.

**Experimental Export Station:** An experimental station intended for export and used for the evaluation or testing of electronics equipment or systems in the design or development stage.

**Experimental Research Station:** An experimental station used in basic studies concerning scientific investigations looking toward the improvement of the art of radiocommunications.

**Experimental Station:** A station utilizing radio waves in experiments with a view to the development of science or technique. This definition does not include amateur stations. (RR)

**Experimental Testing Station:** An experimental station used for the evaluation or testing of electronics equipment or systems, including site selection and transmission path surveys, which have been developed

for operational use.

**Facsimile:** A form of telegraphy for the transmission of fixed images, with or without half-tones, with a view to their reproduction in a permanent form. (RR)

**Feeder Link:** A radio link from an earth station at a given location to a space station, or vice versa, conveying information for a space radiocommunication service other than for the fixed-satellite service. The given location may be at a specified fixed point, or at any fixed point within specified areas. (RR)

**Field-Disturbance Sensor:** A restricted radiation device which establishes a radio frequency field in its vicinity and detects changes in that field resulting from the movement of persons or objects within the radio frequency field. Examples: microwave intrusion sensors; devices that use RF energy for production line counting and sensing.

**Fixed Earth Station:** An earth station intended to be used at a specified fixed point.

**Fixed-Satellite Earth Station:** An earth station in the fixed-satellite service.

**Fixed-Satellite Service:** A radiocommunication service between earth stations at given positions when one or more satellites are used; the given position may be a specified fixed point or any fixed point within specified areas; in some cases this service includes satellite-to-satellite links, which may also be operated in the inter-satellite service, the fixed-satellite service may also include feeder links for other space radiocommunication services. (RR)

**Fixed-Satellite Space Station:** A space station in the fixed-satellite service.

**Fixed Service:** A radiocommunication service between specified fixed points. (RR)

**Fixed Station:** A station in the fixed service. (RR)

**Flight Telemetry Land Station:** A telemetry land station the emissions of which are used for telemetry to a balloon; to a booster or rocket, excluding a booster or rocket in orbit about the Earth or in deep space; or to an aircraft, excluding a station used in the flight testing of an aircraft.

**Flight Telemetry Mobile Station:** A telemetry mobile station used for transmitting data from an airborne vehicle, excluding data related to airborne testing of the vehicle itself, (or major components thereof).



**Flight Termination:** An emergency action taken by range safety when a vehicle violates established safety criteria for the protection of life and property. This action circumvents the vehicles' normal control modes and ends its powered and/or controlled flight. This action may include any one or a combination of the following:

- a. Complete vehicle destruction by explosive means.
- b. Aerodynamic disruption of the flight mechanism.
- c. Deployment of high drag devices.
- d. Fuel cut-off to the combustion chambers of ignited motors.
- e. Inhibit ignition of unburned motors.
- f. Other special actions dictated by the vehicle configuration or special problems.

These actions may be activated by manual, computerized, and/or automatic modes.

**Flight Test Station:** An aeronautical station used for the transmission of essential communications in connection with the testing of aircraft or major components of aircraft.

**Frequency-Hopping Spread Spectrum:** A signal structuring technique employing automatic switching of the transmitted frequency. Selection of the frequency to be transmitted is typically made in a pseudo-random manner from a set of frequencies covering a band wider than the information band-width. The intended receiver would frequency-hop in synchronization with the code of the transmitter in order to retrieve the desired information.

**Frequency Sharing:** The common use of the same portion of the radio frequency spectrum by two or more users where a probability of interference exists.

**Frequency-Shift Telegraphy:** Telegraphy by frequency modulation in which the telegraph signal shifts the frequency of the carrier between predetermined values. (RR)

**Frequency Tolerance:** The maximum permissible departure by the center frequency of the frequency band occupied by an emission from the assigned frequency or, by the characteristic frequency of an emission from the reference frequency. The frequency tolerance is expressed in parts in  $10^6$  or in Hertz. (RR)

**Full Carrier Single-Sideband Emission:** A single-sideband emission without reduction of the

carrier. (RR)

**Gain of an Antenna:** The ratio, usually expressed in decibels, of the power required at the input of a loss free reference antenna to the power supplied to the input of the given antenna to produce, in a given direction, the same field strength or the same power flux-density at the same distance. When not specified otherwise, the gain refers to the direction of maximum radiation. The gain may be considered for a specified polarization. Depending on the choice of the reference antenna a distinction is made between:

! absolute or isotropic gain ( $G_i$ ), when the reference antenna is an isotropic antenna isolated in space;

! gain relative to a half-wave dipole ( $G_d$ ), when the reference antenna is a half-wave dipole isolated in space whose equatorial plane contains the given direction;

! gain relative to a short vertical antenna ( $G_v$ ), when the reference antenna is a linear conductor, much shorter than one quarter of the wavelength, normal to the surface of a perfectly conducting plane which contains the given direction. (RR)

**Geostationary Satellite:** A geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a satellite which remains approximately fixed relative to the Earth. (RR)

**Geostationary Satellite Orbit:** The orbit of a geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator. (RR)

**Geosynchronous Satellite:** An earth satellite whose period of revolution is equal to the period of rotation of the Earth about its axis. (RR)

**Glide Path (Slope) Station:** A radionavigation land station which provides vertical guidance to aircraft during approach to landing.

**Harmful Interference:** Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with these Regulations. (RR)

**Hertz:** A unit of frequency which is equivalent to one cycle per second.

**Hybrid Spread Spectrum:** A combination of Frequency Hopping Spread Spectrum and Direct

Sequence Spread Spectrum.

**Hydrologic and Meteorological Fixed Station:**

A fixed station the emissions of which are used for the automatic transmission of either hydrologic or meteorological data, or both.

**Hydrologic and Meteorological Land Station:**

A land station the emissions of which are used for the automatic transmission of either hydrologic or meteorological data, or both.

**Hydrologic and Meteorological Mobile Station:**

A mobile station the emissions of which are used for the automatic transmission of either hydrologic or meteorological data, or both.

**Incidental Radiation Device:** A device that radiates radio frequency energy during the course of its operation although the device is not intentionally designed to generate radio frequency energy.

**Inclination of an Orbit (of an earth satellite):**

The angle determined by the plane containing the orbit and the plane of the Earth's equator. (RR)

**Individual Reception (in the broadcasting-satellite service):** The reception of emissions from a space station in the broadcasting-satellite service by simple domestic installations and in particular those possessing small antennae. (RR)

**Industrial Heating Equipment:** Any apparatus which utilizes a radio frequency oscillator or any other type of radio frequency generator and transmits radio frequency energy used for or in connection with industrial heating operations utilized in a manufacturing or production process.

**Industrial, Scientific and Medical (ISM) Applications (of radio frequency energy):** Operation of equipment or appliances designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications. (RR)

**Instrument Landing System (ILS):** A radio-navigation system which provides aircraft with horizontal and vertical guidance just before and during landing and, at certain fixed points, indicates the distance to the reference point of landing. (RR)

**Instrument Landing System Glide Path:** A system of vertical guidance embodied in the instrument landing system which indicates the vertical deviation of the aircraft from its optimum path of descent. (RR)

**Instrument Landing System Localizer:** A

system of horizontal guidance embodied in the instrument landing system which indicates the horizontal deviation of the aircraft from its optimum path of descent along the axis of the runway. (RR)

**Interference:** The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy. (RR)

**International Broadcasting Station:** A broadcasting station, employing frequencies allocated to the broadcasting service between 5950 kHz and 26100 kHz, whose transmissions are intended to be received directly by the general public in foreign countries.

**Inter-Satellite Service:** A radiocommunication service providing links between artificial earth satellites. (RR)

**Inter-Satellite Space Station:** A space station in the inter-satellite service.

**Ionosphere Sounder:** A device that transmits signals for the purpose of determining ionospheric conditions.

**Ionospheric Scatter:** The propagation of radio waves by scattering as a result of irregularities or discontinuities in the ionization of the ionosphere. (RR)

**Land Earth Station:** An earth station in the fixed-satellite service or, in some cases, in the mobile-satellite service, located at a specified fixed point or within a specified area on land to provide a feeder link for the mobile-satellite service. (RR)

**Land Mobile Earth Station:** A mobile earth station in the land mobile-satellite service capable of surface movement within the geographical limits of a country or continent. (RR)

**Land Mobile-Satellite Service:** A mobile-satellite service in which mobile earth stations are located on land. (RR)

**Land Mobile-Satellite Space Station:** A space station in the land mobile-satellite service.

**Land Mobile Service:** A mobile service between base stations and land mobile stations, or between land mobile stations. (RR)

**Land Mobile Station:** A mobile station in the land mobile service capable of surface movement within the geographical limits of a country or continent. (RR)

**Land Station:** A station in the mobile service not intended to be used while in motion. (RR)

**Left-Hand (or Anti-Clockwise) Polarized Wave:** An elliptically or circularly-polarized wave, in which the electric field vector, observed in any fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a left-hand or anticlockwise direction. (RR)

**Localizer Station:** A radionavigation land station in the aeronautical radionavigation service which employs an Instrument Landing System Localizer.

**Loran Station:** A long distance radionavigation land station transmitting synchronized pulses. Hyperbolic lines of position are determined by the measurement of the difference in the time of arrival of these pulses.

**Low-Power Communication Device:** A restricted radiation device, exclusive of those employing conducted or guided radio frequency techniques, used for the transmission of signs, signals (including control signals), writing, images and sounds or intelligence of any nature by radiation of electromagnetic energy. Examples: Wireless microphone, phonograph oscillator, radio-controlled garage door opener, and radio-controlled models.

**Marine Broadcast Station:** A coast station which makes scheduled broadcasts of time, meteorological, and hydrographic information.

**Marine Radiobeacon Station:** A radiobeacon station in the maritime radionavigation service intended for the benefit of ships.

**Maritime Mobile-Satellite Service:** A mobile-satellite service in which mobile earth stations are located on board ships; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service. (RR)

**Maritime Mobile-Satellite Space Station:** A space station in the maritime mobile-satellite service.

**Maritime Mobile Service:** A mobile service between coast stations and ship stations, or between ship stations, or between associated on-board communication stations; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service. (RR)

**Maritime Radionavigation-Satellite Earth Station:** An fixed earth station in the maritime radionavigation-satellite service.

**Maritime Radionavigation-Satellite Mobile**

**Earth Station:** A mobile earth station in the maritime radionavigation-satellite service.

**Maritime Radionavigation-Satellite Service:** A radionavigation-satellite service in which earth stations are located on board ships. (RR)

**Maritime Radionavigation-Satellite Space Station:** A space station in the maritime radionavigation-satellite service.

**Maritime Radionavigation Service:** A radionavigation service intended for the benefit and for the safe operation of ships. (RR)

**Marker Beacon:** A transmitter in the aeronautical radionavigation service which radiates vertically a distinctive pattern for providing position information to aircraft. (RR)

**Mean Power (of a radio transmitter):** The average power supplied to the antenna transmission line by a transmitter during an interval of time sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions. (RR)

**Medical Diathermy Equipment:** Any apparatus (other than surgical diathermy apparatus designed for intermittent operation with low power), which utilizes a radio frequency oscillator or any other type of radio frequency generator and transmits radio frequency energy used for therapeutic purposes.

**Meteor Burst Communications:** Communications by the propagation of radio signals reflected by ionized meteor trails.

**Meteorological Aids Service:** A radiocommunication service used for meteorological, including hydrological, observations and exploration. (RR)

**Meteorological Radar Station:** A station in the meteorological aids service employing radar.

**Meteorological-Satellite Earth Station:** An earth station in the meteorological-satellite service.

**Meteorological-Satellite Service:** An Earth exploration-satellite service for meteorological purposes. (RR)

**Meteorological-Satellite Space Station:** A space station in the meteorological-satellite service.

**Miscellaneous ISM Equipment:** Any apparatus other than that defined as medical diathermy equipment or industrial heating equipment, or otherwise excepted by those definitions, in which radio frequency energy is applied to materials to produce physical, biological, or chemical effects such

as heating, ionization of gases, mechanical vibrations, hair removal, and acceleration of charged particles, which do not involve communications or the use of radio receiving equipment.

**Mobile Earth Station:** An earth station in the mobile-satellite service intended to be used while in motion or during halts at unspecified points. (RR)

**Mobile-Satellite Service:** A radiocommunication service:

! between mobile earth stations and one or more space stations, or between space stations used by this service; or

! between mobile earth stations by means of one or more space stations.

This service may also include feeder links necessary for its operation. (RR)

**Mobile-Satellite Space Station:** A space station in the mobile-satellite service.

**Mobile Service:** A radiocommunication service between mobile and land stations, or between mobile stations. (RR)

**Mobile Station:** A station in the mobile service intended to be used while in motion or during halts at unspecified points. (RR)

**Multi-Function System:** A system that provides for more than one type of telecommunication with the same equipment. This system can have one or more principal functions and may have one or more secondary functions contained within the signal format or structure. The signal structure technique can be either of a conventional or spread spectrum type.

**Multi-Satellite Link:** A radio link between a transmitting earth station and a receiving earth station through two or more satellites, without any intermediate earth station. A multi-satellite link comprises one up-link, one or more satellite-to-satellite links and one downlink. (RR)

**Necessary Bandwidth:** For a given class of emission, the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions. (RR) (See Annex J for formulas used to calculate necessary bandwidth.)

**Occupied Bandwidth:** The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage  $B/2$  of the total mean

power of a given emission. Unless otherwise specified by the ITU-R for the appropriate class of emission, the value of  $B/2$  should be taken as 0.5%. (RR)

**Oceanographic Data Interrogating Station:** A station in the maritime mobile service the emissions of which are used to initiate, modify or terminate functions of equipment directly associated with an oceanographic data station, including the station itself.

**Oceanographic Data Station:** A station in the maritime mobile service located on a ship, buoy, or other sensor platform the emissions of which are used for transmission of oceanographic data.

**Omnidirectional Range Station:** A radionavigation land station in the aeronautical radionavigation service providing direct indication of the bearing (omnibearing) of that station from an aircraft.

**On-Board Communication Station:** A low-powered mobile station in the maritime mobile service intended for use for internal communications on board a ship, or between a ship and its lifeboats and liferafts during lifeboat drills or operations, or for communication within a group of vessels being towed or pushed, as well as for line handling and mooring instructions. (RR)

**Orbit:** The path, relative to a specified frame of reference, described by the center of mass of a satellite or other object in space subjected primarily to natural forces, mainly the force of gravity. (RR)

**Out-of-band Emission:** Emission on a frequency or frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emission. (RR)

**Passive Sensor:** A measuring instrument in the Earth exploration-satellite service or in the space research service by means of which information is obtained by reception of radio waves of natural origin. (RR)

**Peak Envelope Power (of a radio transmitter):** The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle at the crest of the modulation envelope taken under normal operating conditions. (RR)

**Perimeter Protection System:** A field disturbance sensor which uses buried leaky cables installed around a facility to detect any unauthorized entry or exit.

**Period (of a satellite):** The time elapsing between two consecutive passages of a satellite through a characteristic point on its orbit. (RR)

**Permissible Interference:**<sup>1</sup> Observed or predicted interference which complies with quantitative interference and sharing criteria contained in these Regulations or in ITU-R Recommendations or in special agreements as provided for in these Regulations. (RR)

**Port Operations Service:** A maritime mobile service in or near a port, between coast stations and ship stations, or between ship stations, in which messages are restricted to those relating to the operational handling, the movement and the safety of ships and, in emergency, to the safety of persons. Messages which are of a public correspondence nature shall be excluded from this service. (RR)

**Port Station:** A coast station in the port operations service. (RR)

**Portable Aircraft Station:** A portable station operating in the aeronautical mobile service.

**Portable Land Mobile Station:** A portable station operating in the land mobile service.

**Portable Mobile Station:** A portable station operating in the mobile service.

**Portable Radiolocation Station:** A portable station operating in the radiolocation service.

**Portable Ship Station:** A portable station operating in the maritime mobile service.

**Portable Station:** A station designed to be carried by a person and capable of transmitting and/or receiving while in motion or during brief halts at unspecified locations.

**Power:** Whenever the power of a radio transmitter etc. is referred to it shall be expressed in one of the following forms, according to the class of emission, using the arbitrary symbols indicated:

- ! peak envelope power (PX or pX);
- ! mean power (PY or pY);
- ! carrier power (PZ or pZ).

For different classes of emission, the relationships between peak envelope power, mean power and carrier power, under the conditions of normal operation and of no modulation, are contained in ITU-R Recommendations which may be used as a guide. For use in formulae, the symbol *p* denotes power expressed in watts and the symbol *P* denotes power expressed in decibels relative to a reference level. (RR) (See also Carrier Power of a Radio Transmitter, Effective Radiated Power, Mean Power of a Radio Transmitter, and Peak Envelope Power of

a Radio Transmitter.)

**Primary Radar:** A radiodetermination system based on the comparison of reference signals with radio signals reflected from the position to be determined. (RR)

**Priority:** Priority, unless specifically qualified, is the right to occupy a specific frequency for authorized uses, free of harmful interference from stations of other agencies.

**Processing Gain:** The ratio of the post processing signal-to-noise ratio to the received signal-to-noise ratio, usually expressed in dB.

**Protection Ratio (R.F.):** The minimum value of the wanted-to-unwanted signal ratio, usually expressed in decibels, at the receiver input determined under specified conditions such that a specified reception quality of the wanted signal is achieved at the receiver output. (RR)

**Public Correspondence:** Any telecommunication which the offices and stations must, by reason of their being at the disposal of the public, accept for transmission. (RR)

**Radar:** A radiodetermination system based on the comparison of reference signals with radio signals reflected, or retransmitted, from the position to be determined. (RR)

**Radar Beacon (racon):** A transmitter-receiver associated with a fixed navigational mark which, when triggered by a radar, automatically returns a distinctive signal which can appear on the display of the triggering radar, providing range, bearing and identification information. (RR)

**Radar Beacon Precipitation Gage Station:** A transponder station in the meteorological aids service, the emissions of which are used for telemetering.

**Radar Beacon (racon) Station:** A station which employs a radar beacon (racon).

**Radar Transponder:** A receiver-transmitter facility the function of which is to transmit signals automatically when proper interrogation is received.

**Radiation:** The outward flow of energy from any source in the form of radio waves. (RR)

**Radio:** A general term applied to the use of radio waves. (RR)

**Radio Altimeter:** Radionavigation equipment, on board an aircraft or spacecraft, used to determine the height of the aircraft or the spacecraft above the Earth's surface or another surface. (RR)

**Radio Astronomy:** Astronomy based on the reception of radio waves of cosmic origin. (RR)

**Radio Astronomy Service:** A service involving the use of radio astronomy. (RR)

**Radio Astronomy Station:** A station in the radio astronomy service. (RR) (This is always a receiving station.)

**Radio Beacon Mobile Station:** A mobile station the emissions of which are used to determine its location.

**Radiobeacon Station:** A station in the radionavigation service the emissions of which are intended to enable a mobile station to determine its bearing or direction in relation to the radiobeacon station. (RR)

**Radiocommunication:** Telecommunication by means of radio waves. (RR)

**Radiocommunication Service:** A service as defined in this Section involving the transmission, emission and/or reception of radio waves for specific telecommunication purposes. In these regulations, unless otherwise stated, any radiocommunication service relates to terrestrial radiocommunication. (RR)

**Radiodetermination:** The determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of radio waves. (RR)

**Radiodetermination-Satellite Earth Station:** A fixed earth station in the radiodetermination-satellite service.

**Radiodetermination-Satellite Mobile Earth Station:** A mobile earth station in the radiodetermination-satellite service.

**Radiodetermination-Satellite Service:** A radiocommunication service for the purpose of radiodetermination involving the use of one or more space stations. This service may also include feeder links necessary for its own operation. (RR)

**Radiodetermination-Satellite Space Station:** A space station in the radiodetermination-satellite service.

**Radiodetermination Service:** A radiocommunication service for the purpose of radiodetermination. (RR)

**Radiodetermination Station:** A station in the radiodetermination service. (RR)

**Radio Direction-Finding:** Radiodetermination

using the reception of radio waves for the purpose of determining the direction of a station or object. (RR)

**Radio Direction-Finding Station:** A radiodetermination station using radio direction-finding. (RR)

**Radiolocation:** Radiodetermination used for purposes other than those of radionavigation. (RR)

**Radiolocation Land Station:** A station in the radiolocation service not intended to be used while in motion. (RR)

**Radiolocation Mobile Station:** A station in the radiolocation service intended to be used while in motion or during halts at unspecified points. (RR)

**Radiolocation-Satellite Service:** A radiodetermination-satellite service used for the purpose of radiolocation. This service may also include the feeder links necessary for its operation. (RR)

**Radiolocation Service:** A radiodetermination service for the purpose of radiolocation. (RR)

**Radionavigation:** Radiodetermination used for the purposes of navigation, including obstruction warning. (RR)

**Radionavigation Land Station:** A station in the radionavigation service not intended to be used while in motion. (RR)

**Radionavigation Land Test Station (Maintenance Test Facility):** A radionavigation land station in the aeronautical radionavigation service which is used as a radionavigation calibration station for the transmission of essential information in connection with the testing and calibration of aircraft navigational aids, receiving equipment and interrogators at predetermined surface locations. The primary purpose of this facility is to permit maintenance testing by aircraft radio service personnel.

**Radionavigation Land Test Station (Operational Test Facility):** A radionavigation land station in the aeronautical radionavigation service which is used as a radionavigation calibration station for the transmission of essential information in connection with the testing and calibration of aircraft navigational aids, receiving equipment and interrogators at predetermined surface locations. The primary purpose of this facility is to permit the pilot to check a radionavigation system aboard the aircraft prior to takeoff.

**Radionavigation Mobile Station:** A station in the radionavigation service intended to be used while in motion or during halts at unspecified points. (RR)

**Radionavigation-Satellite Earth Station:** An earth station in the radionavigation-satellite service.

**Radionavigation-Satellite Mobile Earth Station:** A mobile earth station in the radionavigation-satellite service.

**Radionavigation-Satellite Service:** A radiodetermination-satellite service used for the purpose of radionavigation. This service may also include feeder links necessary for its operation. (RR)

**Radionavigation-Satellite Space Station:** A space station in the radionavigation-satellite service.

**Radionavigation Service:** A radiodetermination service for the purpose of radionavigation. (RR)

**Radio Range Station:** A radionavigation land station in the aeronautical radionavigation service providing radial equisignal zones. (In certain instances a radio range station may be placed on board a ship.)

**Radiosonde:** An automatic radio transmitter in the meteorological aids service usually carried on an aircraft, free balloon, kite, or parachute, and which transmits meteorological data. (RR)

**Radiosonde Ground Station:** A station in the meteorological aids service employing a ground station associated with a radiosonde.

**Radiosonde Station:** A station in the meteorological aids service employing a radiosonde.

**Radiotelegram:** A telegram, originating in or intended for a mobile station or a mobile earth station transmitted on all or part of its route over the radiocommunication channels of the mobile service or of the mobile-satellite service. (RR)

**Radiotelemetry:** Telemetry by means of radio waves. (RR)

**Radiotelephone Call:** A telephone call, originating in or intended for a mobile station or a mobile earth station, transmitted on all or part of its route over the radiocommunication channels of the mobile service or of the mobile-satellite service. (RR)

**Radiotelex Call:** A telex call, originating in or intended for a mobile station or a mobile earth station, transmitted on all or part of its route over the radiocommunication channels of the mobile service or the mobile-satellite service. (RR)

**Radio Waves or Hertzian Waves:** Electromagnetic waves of frequencies arbitrarily lower than 3000 GHz, propagated in space without artificial guide. (RR)

**Reduced Carrier Single-Sideband Emission:** A

single-sideband emission in which the degree of carrier suppression enables the carrier to be reconstituted and to be used for demodulation. (RR)

**Reference Frequency:** A frequency having a fixed and specific position with respect to the assigned frequency. The displacement of this frequency with respect to the assigned frequency has the same absolute value and sign that the displacement of the characteristic frequency has with respect to the center of the frequency band occupied by the emission. (RR) (See also Characteristic Frequency.)

**Reflecting Satellite:** A satellite intended to reflect radiocommunication signals. (RR)

**Restricted Radiation Device:** A device in which the generation of radio frequency energy is intentionally incorporated into the design, and in which the radio frequency energy is conducted along wires or is radiated, exclusive of transmitters for which provisions are made under those parts of Chapter 7 other than Part 7.9, and exclusive of Industrial, Scientific, and Medical (ISM) equipment.

**Re-usable Launch Vehicle (RLV):** A booster rocket that can be recovered after launch, refurbished, and relaunched.

**Right-Hand (or Clockwise) Polarized Wave:** An elliptically or circularly-polarized wave, in which the electric field vector, observed in any fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a right-hand or clockwise direction. (RR)

**RF Stabilized Arc Welder:** Any welding equipment that utilizes radio frequency energy to initiate and stabilize the arc. An RF stabilized arc welder includes the source of the RF and welding currents, the welding torch, and all interconnecting cables.

**Safety Service:** Any radiocommunication service used permanently or temporarily for the safeguarding of human life and property. (RR)

**Satellite:** A body which revolves around another body of preponderant mass and which has a motion primarily and permanently determined by the force of attraction of that other body. (RR)

**Satellite Emergency Position-Indicating Radio-beacon:** An earth station in the mobile-satellite service the emissions of which are intended to facilitate search and rescue operations. (RR)

**Satellite Link:** A radio link between a transmitting earth station and a receiving earth station through one

satellite. A satellite link comprises one uplink and one downlink. (RR)

**Satellite Network:** A satellite system or a part of a satellite system, consisting of only one satellite and the cooperating earth stations. (RR)

**Satellite System:** A space system using one or more artificial earth satellites. (RR)

**Secondary Radar:** A radiodetermination system based on the comparison of reference signals with radio signals retransmitted from the position to be determined. (RR)

**Semi-Duplex Operation:** A method which is simplex operation at one end of the circuit and duplex operation at the other.<sup>3</sup> (RR)

**Ship Earth Station:** A mobile earth station in the maritime mobile-satellite service located on board ship. (RR)

**Ship's Emergency Transmitter:** A ship's transmitter to be used exclusively on a distress frequency for distress, urgency or safety purposes. (RR)

**Ship Movement Service:** A safety service in the maritime mobile service other than a port operations service, between coast stations and ship stations, or between ship stations, in which messages are restricted to those relating to the movement of ships. Messages which are of a public correspondence nature shall be excluded from this service. (RR)

**Ship Station:** A mobile station in the maritime mobile service located on board a vessel which is not permanently moored, other than a survival craft station. (RR)

**Simplex Operation:** Operating method in which transmission is made possible alternately in each direction of a telecommunication channel, for example, by means of manual control.<sup>5</sup> (RR)

**Single-Sideband Emission:** An amplitude modulated emission with one sideband only. (RR)

**Sounder Network Station:** A station equipped with an ionosphere sounder used for the realtime selection of frequencies for operational communication circuits.

**Sounder Prediction Station:** A station equipped with an ionosphere sounder for realtime monitoring of upper atmosphere phenomena or to obtain data for the prediction of propagation conditions.

**Spacecraft:** A man-made vehicle which is intended to go beyond the major portion of the Earth's atmosphere. (RR)

**Space Operation Earth Station:** An earth station in the space operation service.

**Space Operation Service:** A radiocommunication service concerned exclusively with the operation of spacecraft, in particular space tracking, space telemetry and space telecommand. These functions will normally be provided within the service in which the space station is operating. (RR)

**Space Operation Space Station:** A space station in the space operation service.

**Space Radiocommunication:** Any radiocommunication involving the use of one or more space stations or the use of one or more reflecting satellites or other objects in space. (RR)

**Space Research Earth Station:** An earth station in the space research service.

**Space Research Service:** A radiocommunication service in which spacecraft or other objects in space are used for scientific or technological research purposes. (RR)

**Space Research Space Station:** A space station in the space research service.

**Space Station:** A station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere. (RR)

**Space System:** Any group of cooperating earth stations and/or space stations employing space radiocommunication for specific purposes. (RR)

**Space Telecommand:** The use of radiocommunication for the transmission of signals to a space station to initiate, modify or terminate functions of equipment on an associated space object, including the space station. (RR)

**Space Telecommand Earth Station:** An earth station the emissions of which are used for space telecommand.

**Space Telecommand Space Station:** A space station which receives emissions used for space telecommand.

**Space Telemetry Earth Station:** An earth station which receives emissions used for space telemetry.

**Space Telemetry Space Station:** A space station the emissions of which are used for space telemetry.

**Space Telemetry:** The use of telemetry for the transmission from a space station of results of



measurements made in a spacecraft, including those relating to the functioning of the spacecraft. (RR)

**Space Tracking:** Determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination, excluding primary radar, for the purpose of following the movement of the object. (RR)

**Space Tracking Earth Station:** An earth station which transmits or receives emissions used for space tracking.

**Space Tracking Space Station:** A space station which transmits or receives and retransmits emissions used for space tracking.

**Space Transponder:** A receiver-transmitter combination on board a satellite or space craft which receives a signal and transmits it at a different carrier frequency.

**Special Service:** A radiocommunication service, not otherwise defined in this Section, carried on exclusively for specific needs of general utility, and not open to public correspondence. (RR)

**Specialized Mobile Radio Service:** A radio service in which licensees provide land mobile communications services in the 800 MHz and 900 MHz bands on a commercial basis to entities eligible to be licensed under this part, federal government entities, and individuals.

**Spread Spectrum:** A signal structuring technique that employs direct sequence, frequency hopping or a hybrid of these, which can be used for multiple access and/or multiple functions. This technique decreases the potential interference to other receivers while achieving privacy and increasing the immunity of spread spectrum receivers to noise and interference. Spread spectrum generally makes use of a sequential noise-like signal structure to spread the normally narrowband information signal over a relatively wide band of frequencies. The receiver correlates the signals to retrieve the original information signal.

**Spurious Emission:** Emission on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions. (RR)

**Squelch:** A circuit function that acts to suppress

the audio output of a receiver.

**Standard Frequency and Time Signal Station:** A station in the standard frequency and time signal service. (RR)

**Standard Frequency and Time Signal-Satellite Service:** A radiocommunication service using space stations on earth satellites for the same purpose as those of the standard frequency and time signal service. This service may also include feeder links necessary for its operation. (RR)

**Standard Frequency and Time Signal-Satellite Space Station:** A space station in the standard frequency and time signal-satellite service.

**Standard Frequency and Time Signal Service:** A radiocommunication service for scientific, technical and other purposes, providing the transmission of specified frequencies, time signals, or both, of stated high precision, intended for general reception. (RR)

**Station:** One or more transmitters or receivers or a combination of transmitters and receivers, including the accessory equipment, necessary at one location for carrying on a radiocommunication service, or the radio astronomy service. Each station shall be classified by the service in which it operates permanently or temporarily. (RR)

**Steerable Satellite Beam:** A satellite antenna beam that can be re-pointed. (RR)

**Suppressed Carrier Single-Sideband Emission:** A single-sideband emission in which the carrier is virtually suppressed and not intended to be used for demodulation. (RR)

**Surface Telemetry Land Station:** A telemetry land station the emission of which are intended to be received on the surface of the Earth.

**Surface Telemetry Mobile Station:** A telemetry mobile station located on the surface of the Earth and the emissions of which are intended to be received on the surface of the Earth.

**Surveillance Radar Station:** A radionavigation land station in the aeronautical radionavigation service employing radar to display the presence of aircraft within its range. (In certain instances, a surveillance radar station may be placed on board a ship.)

**Survival Craft Station:** A mobile station in the maritime mobile service or the aeronautical mobile service intended solely for survival purposes and located on any lifeboat, life-raft or other survival equipment. (RR)

**Telecommand:** The use of telecommunication for the transmission of signals to initiate, modify or terminate functions of equipment at a distance. (RR)

**Telecommand Aeronautical Station:** A land station in the aeronautical mobile service the emissions of which are used for terrestrial telecommand.

**Telecommand Aircraft Station:** A mobile station in the aeronautical mobile service the emissions of which are used for terrestrial telecommand.

**Telecommand Base Station:** A land station in the land mobile service the emissions of which are used for terrestrial telecommand.

**Telecommand Coast Station:** A land station in the maritime mobile service the emissions of which are used for terrestrial telecommand.

**Telecommand Fixed Station:** A fixed station in the fixed service the emissions of which are used for terrestrial telecommand.

**Telecommand Land Station:** A land station in the mobile service the emissions of which are used for terrestrial telecommand.

**Telecommand Land Mobile Station:** A mobile station in the land mobile service the emissions of which are used for terrestrial telecommand.

**Telecommand Mobile Station:** A mobile station in the mobile service the emissions of which are used for terrestrial telecommand.

**Telecommand Ship Station:** A mobile station in the maritime mobile service the emissions of which are used for terrestrial telecommand.

**Telecommunication:** Any transmission, emission or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems. (RR)

**Telegram:** Written matter intended to be transmitted by telegraphy for delivery to the addressee. This term also includes radiotelegrams unless otherwise specified. In this definition the term telegraphy has the same general meaning as defined in the Convention. (RR)

**Telegraphy:** A form of telecommunication in which the transmitted information is intended to be recorded on arrival as a graphic document; the transmitted information may sometimes be presented in an alternative form or may be stored for subsequent use. (RR)

**Telemetering Fixed Station:** A fixed station the

emissions of which are used for telemetering.

**Telemetering Land Station:** A land station the emissions of which are used for telemetering.

**Telemetering Mobile Station:** A mobile station the emissions of which are used for telemetering.

**Telemetry:** The use of telecommunication for automatically indicating or recording measurements at a distance from the measuring instrument. (RR)

**Telephony:** A form of telecommunication primarily intended for the exchange of information in the form of speech. (RR)

**Television:** A form of telecommunication for the transmission of transient images of fixed or moving objects. (RR)

**Terrestrial Radiocommunication:** Any radio-communication other than space radiocommunication or radio astronomy. (RR)

**Terrestrial Station:** A station effecting terrestrial radiocommunication. In these Regulations, unless otherwise stated, any station is a terrestrial station. (RR)

**Time-Gated Direct Sequence Spread Spectrum:** Direct-Sequence Spread Spectrum where the transmitter is on only for a short fraction of a time interval. The on-time can be periodic or random within a time interval.

**Transportable Station:** A station which is transferred to various fixed locations but is not intended to be used while in motion.

**Travelers Information Station:** A base station in the Land Mobile Service used to transmit non-commercial voice information pertaining to traffic and road conditions, traffic hazard and travelers advisories, directions, availability of lodging, rest stops and service stations, and descriptions of local points of interest.

**Tropospheric Scatter:** The propagation of radio waves by scattering as a result of irregularities or discontinuities in the physical properties of the troposphere. (RR)

**Ultrasonic Equipment:** Any apparatus which generates radio frequency energy and utilizes that energy to excite or drive an electro-mechanical transducer for the production of sonic or ultrasonic mechanical energy for industrial, scientific, medical, or other non-communication purposes.

**Ultra-Wideband Radar:** A radar having an instantaneous bandwidth greater than 25 percent of its

center frequency.

**United States:** The term "United States" includes the 50 States and the District of Columbia. (See also definition for "Conterminous United States" and "United States and Possessions.")

**United States and Possessions:** The term "United States and Possessions" includes the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, and the territories and possessions (but less the Canal Zone). (See also definitions for "Conterminous United States" and "United States.")

**Unwanted Emissions:** Consist of spurious emissions and out-of-band emissions. (RR)

**War Emergency:**<sup>5</sup> Any condition proclaimed by the President, under the war emergency power granted to him by Section 706 of the Communications Act of 1934, as amended, that affects the national defense or security of the United States.

**Wired Radio Frequency Systems:** Systems employing restricted radiation devices in which the radio frequency energy is conducted or guided along wires or in cables, including electric power and telephone lines.

## 6.1.2 Stations (alphabetical by classes)

1. Where a definition is followed by the parenthetical expression "(RR)," it is an indication that the definition is in the ITU Radio Regulations.

2. The suffix "R" shall be added to the established class of station (STC) symbol only if the station is to be used primarily as a repeater in the bands:

29.89-50.00 MHz (exclusive government bands).  
138.00-144.00 MHz.  
148.00-149.90 MHz.  
150.05-150.80 MHz.  
162.00-174.00 MHz.  
406.10-420.00 MHz.

For this purpose, a repeater consists of a radio transmitter, a radio receiver and coupling between the two so as to retransmit unchanged in intelligence the received signal.

3. The following definitions of Stations and associated Station Class (STC-see Section 9.8.2, Para. 15a. through 15c.) symbols are used on U.S. government frequency assignments as applicable.

**FAB--Aeronautical Broadcast Station:** An aeronautical station which makes scheduled

broadcasts of meteorological information and notices to airmen. (In certain instances, an aeronautical broadcast station may be placed on board a ship.)

**TB--Aeronautical Earth Station:** An earth station in the fixed-satellite service or in some cases in the aeronautical mobile-satellite service located at a specified fixed point on land to provide a feeder link for the aeronautical mobile-satellite service. (RR)

**AX--Aeronautical Fixed Station:** A station in the aeronautical fixed service. (RR)

**ALA--Aeronautical Marker Beacon Station:** A radionavigation land station in the aeronautical radionavigation service which employs a marker beacon.

**EJ--Aeronautical Mobile-Satellite Space Station:** A space station in the aeronautical mobile-satellite service. (RR)

**ALC--Aeronautical Radar Beacon (racon) Station:** A land station in the aeronautical radionavigation service which employs a radar beacon (racon).

**ALB--Aeronautical Radiobeacon Station:** A radio-beacon station in the aeronautical radionavigation service intended for the benefit of aircraft.

**AL--Aeronautical Radionavigation Land Station:** A land station in the aeronautical radionavigation service not intended for use while in motion.

**AM--Aeronautical Radionavigation Mobile Station:** A mobile station in the aeronautical radionavigation service intended to be used while in motion or during halts at unspecified points.

**TZ--Aeronautical Radionavigation-Satellite Earth Station:** A fixed earth station in the aeronautical radionavigation-satellite service.

**TO--Aeronautical Radionavigation-Satellite Mobile Earth Station:** A mobile earth station in the aeronautical radionavigation-satellite service. (RR)

**EO--Aeronautical Radionavigation-Satellite Space Station:** A space station in the aeronautical radionavigation-satellite service. (RR)

**FA--Aeronautical Station:** A land station in the aeronautical mobile service. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea. (RR)

**FG--Aeronautical Station (OR):** An aeronautical station in the aeronautical mobile (OR) service. (RR)

**FD--Aeronautical Station (R):** An aeronautical station in the aeronautical mobile (R) service. (RR)

**FLEA--Aeronautical Telemetry Land Station:** A telemetry land station used in the flight testing of

manned or unmanned aircraft, missiles, or major components thereof.

**MOEA--Aeronautical Telemetry Mobile Station:** A telemetry mobile station used for transmitting data directly related to the airborne testing of the vehicle. (or major components), on which the station is installed.

**FLU--Aeronautical Utility Land Station:** A land station located at airdrome control towers and used for control of ground vehicles and aircraft on the ground at airdromes.

**MOU--Aeronautical Utility Mobile Station:** A mobile station used for communication at airdromes with the aeronautical utility land station, the airdrome control station, the FAA flight service station, ground vehicles, and aircraft on the ground. (All transmissions shall be subject to the control of the airdrome control station and shall be discontinued immediately when so requested by the airdrome control operators.)

**TJ--Aircraft Earth Station:** A mobile earth station in the aeronautical mobile-satellite service located on board an aircraft. (RR)

**MA--Aircraft Station:** A mobile station in the aeronautical mobile service, other than a survival craft station, located on board an aircraft. (RR)

**FAC--Airdrome Control Station:** An aeronautical station providing communication between an airdrome control tower and aircraft.

**AMA--Altimeter Station:** A radionavigation mobile station in the aeronautical radionavigation service which employs a radio altimeter.

**TY--Base Earth Station:** An earth station in the fixed-satellite service or in some cases in the land mobile-satellite service located at a specified fixed point or within a specified area on land to provide a feeder link for the land mobile-satellite service. (RR)

**FB--Base Station:** A land station in the land mobile service. (RR)

**EB--Broadcasting-Satellite Space Station (sound broadcasting):** A space station in the broadcasting-satellite service (sound broadcasting). (RR)

**EV--Broadcasting-Satellite Space Station (television):** A space station in the broadcasting-satellite service (television). (RR)

**BC--Broadcasting Station (sound):** A station (sound) in the broadcasting service. (RR)

**BT--Broadcasting Station (television):** A station (television) in the broadcasting service. (RR)

**TI--Coast Earth Station:** An earth station in the fixed-satellite service or in some cases in the maritime mobile-satellite service located at a specified fixed point on land to provide a feeder link for the maritime mobile-satellite service. (RR)

**FC--Coast Station:** A land station in the maritime mobile service. (RR)

**DGP--Differential-Global-Positioning-System (DGPS) Station:** a terrestrial station used for the transmission of differential correction information to DGPS receivers aboard aircraft for navigation.

**TW--Earth Exploration-Satellite Earth Station:** An earth station in the Earth exploration-satellite service. (RR)

**EW--Earth Exploration-Satellite Space Station:** A space station in the Earth exploration-satellite service. (RR)

**TP--Earth Station (receiving):** An earth station used for receiving. (RR) (TP is not used on applications.)

**XM--Experimental Composite Station:** An experimental station used in experimental operations of a complex nature not readily specified or used in operation which is a composite of two or more of the established experimental categories.

**XC--Experimental Contract Developmental Station:** An experimental station used for the evaluation or testing under Government contract of electronics equipment or systems in a design or development stage.

**XD--Experimental Developmental Station:** An experimental station used for evaluation or testing of electronics equipment or systems in a design or development stage.

**XE--Experimental Export Station:** An experimental station intended for export and used for the evaluation or testing of electronics equipment or systems in the design or development stage.

**XR--Experimental Research Station:** An experimental station used in basic studies concerning scientific investigations looking toward the improvement of the art of radiocommunications.

**EX--Experimental Station:** A station utilizing radio waves in experiments with a view to the development of science or technique. This definition does not include amateur stations. (RR) (EX is not used on applications.)

**XT--Experimental Testing Station:** An experimental station used for the evaluation or testing of electronics

equipment or systems, including site selection and transmission path surveys, which have been developed for operational use.

**TC--Fixed-Satellite Earth Station:** An earth station in the fixed-satellite service. (RR)

**EC--Fixed-Satellite Space Station:** A space station in the fixed-satellite service. (RR)

**FX--Fixed Station:** A station in the fixed service. (RR)

**FLEB--Flight Telemetry Land Station:** A telemetry land station the emissions of which are used for telemetry to a balloon; to a booster or rocket, excluding a booster or rocket in orbit about the Earth or in deep space; or to an aircraft, excluding a station used in the flight testing of an aircraft.

**MOEB--Flight Telemetry Mobile Station:** A telemetry mobile station used for transmitting data from an airborne vehicle, excluding data related to airborne testing of the vehicle itself, (or major components thereof).

**FAT--Flight Test Station:** An aeronautical station used for the transmission of essential communications in connection with the testing of aircraft or major components of aircraft.

**ALG--Glide Path (Slope) Station:** A radionavigation land station which provides vertical guidance to aircraft during approach to landing.

**FXH--Hydrologic and Meteorological Fixed Station:** A fixed station the emissions of which are used for the automatic transmission of either hydrologic or meteorological data, or both.

**FLH--Hydrologic and Meteorological Land Station:** A land station the emissions of which are used for the automatic transmission of either hydrologic or meteorological data, or both.

**MOH--Hydrologic and Meteorological Mobile Station:** A mobile station the emissions of which are used for the automatic transmission of either hydrologic or meteorological data, or both.

**ES--Inter-Satellite Space Station:** A space station in the inter-satellite service. (RR)

**VA--Land Earth Station:** An earth station in the fixed-satellite service or in some cases in the mobile-satellite service located at a specified point or within a specified area on land to provide a feeder link for the mobile-satellite service. (RR)

**TU--Land Mobile Earth Station:** A mobile earth station in the land mobile-satellite service capable of

surface movement within the geographical limits of a country or continent. (RR)

**EU--Land Mobile-Satellite Space Station:** A space station in the land mobile-satellite service. (RR)

**ML--Land Mobile Station:** A mobile station in the land mobile service capable of surface movement within the geographical limits of a country or continent. (RR)

**FL--Land Station:** A station in the mobile service not intended to be used while in motion. (RR)

**ALL--Localizer Station:** A radionavigation land station in the aeronautical radionavigation service which employs an Instrument Landing System Localizer.

**RNL--Loran Station:** A long distance radio-navigation land station transmitting synchronized pulses. Hyperbolic lines of position are determined by the measurement of the difference in the time of arrival of these pulses.

**FCB--Marine Broadcast Station:** A coast station which makes scheduled broadcasts of time, meteorological, and hydrographic information.

**NLC--Maritime Radar Beacon (racon) Station:** A land station in the maritime radionavigation service which employs a radar beacon (racon).

**NLM--Maritime Radiobeacon Station:** A radio-beacon station in the maritime radionavigation service intended for the benefit of ships.

**EG--Maritime Mobile-Satellite Space Station:** A space station in the maritime mobile-satellite service. (RR)

**NL--Maritime Radionavigation Land Station:** A land station in the Maritime radionavigation Service not intended for use while in motion.

**TX--Maritime Radionavigation-Satellite Earth Station:** A fixed earth station in the maritime radionavigation-satellite service. (RR)

**TQ--Maritime Radionavigation-Satellite Mobile Earth Station:** A mobile earth station in the maritime radionavigation-satellite service. (RR)

**EQ--Maritime Radionavigation-Satellite Space Station:** A space station in the maritime radionavigation-satellite service. (RR)

**SM--Meteorological Aids Base Station:** A land station in the meteorological aids service not intended for use while in motion.

**SA--Meteorological Aids Mobile Station:** A mobile station in the meteorological aids service intended to

be used while in motion or during halts at unspecified points.

**SMD--Meteorological Radar Station:** A station in the meteorological aids service employing radar.

**TM--Meteorological-Satellite Earth Station:** An earth station in the meteorological-satellite service. (RR)

**EM--Meteorological-Satellite Space Station:** A space station in the meteorological-satellite service. (RR)

**UA--Mobile Earth Station:** An earth station in the mobile-satellite service intended to be used while in motion or during halts at unspecified points. (RR)

**EI--Mobile-Satellite Space Station:** A space station in the mobile-satellite service. (RR)

**MO--Mobile Station:** A station in the mobile service intended to be used while in motion or during halts at unspecified points. (RR)

**OE--Oceanographic Data Interrogating Station:** A station in the maritime mobile service the emissions of which are used to initiate, modify or terminate functions of equipment directly associated with an oceanographic data station, including the station itself.

**OD--Oceanographic Data Station:** A station in the maritime mobile service located on a ship, buoy, or other sensor platform the emissions of which are used for transmission of oceanographic data.

**ALO--Omnidirectional Range Station:** A radionavigation land station in the aeronautical radionavigation service providing direct indication of the bearing (omnibearing) of that station from an aircraft.

**MAP--Portable Aircraft Station:** A portable station operating in the aeronautical mobile service.

**MLP--Portable Land Mobile Station:** A portable station operating in the land mobile service.

**MOP--Portable Mobile Station:** A portable station operating in the mobile service.

**MRP--Portable Radiolocation Station:** A portable station operating in the radiolocation service.

**MSP--Portable Ship Station:** A portable station operating in the maritime mobile service.

**FP--Port Station:** A coast station in the port operations service. (RR)

**SMB--Radar Beacon Precipitation Gage Station:** A transponder station in the meteorological aids service, the emissions of which are used for telemetering.

**RA--Radio Astronomy Station:** A station in the

radio astronomy service. (RR) (This is always a receiving station.)

**MOB--Radio Beacon Mobile Station:** A mobile station the emissions of which are used to determine its location.

**TF--Radiodetermination-Satellite Earth Station:** A fixed earth station in the radiodetermination-satellite service. (RR)

**TL--Radiodetermination-Satellite Mobile Earth Station:** A mobile earth station in the radiodetermination-satellite service. (RR)

**EF--Radiodetermination-Satellite Space Station:** A space station in the radiodetermination-satellite service. (RR)

**RG--Radio Direction-Finding Station:** A radiodetermination station using radio direction-finding. (RR)

**LR--Radiolocation Land Station:** A station in the radiolocation service not intended to be used while in motion. (RR)

**MR--Radiolocation Mobile Station:** A station in the radiolocation service intended to be used while in motion or during halts at unspecified points. (RR)

**RN--Radionavigation Land Station:** A station in the radionavigation service not intended to be used in motion. (RR)

**ALTM--Radionavigation Land Test Station (Maintenance Test Facility):** A radionavigation land station in the aeronautical radionavigation service which is used as a radionavigation calibration station for the transmission of essential information in connection with the testing and calibration of aircraft navigational aids, receiving equipment and interrogators at predetermined surface locations. The primary purpose of this facility is to permit maintenance testing by aircraft radio service personnel.

**ALTO--Radionavigation Land Test Station (Operational Test Facility):** A radionavigation land station in the aeronautical radionavigation service which is used as a radionavigation calibration station for the transmission of essential information in connection with the testing and calibration of aircraft navigational aids, receiving equipment and interrogators at predetermined surface locations. The primary purpose of this facility is to permit the pilot to check a radionavigation system aboard the aircraft prior to takeoff.

**NR--Radionavigation Mobile Station:** A station in

the radionavigation service intended to be used while in motion or during halts at unspecified points. (RR)

**TN--Radionavigation-Satellite Fixed Earth Station:** A fixed earth station in the radionavigation-satellite service. (RR)

**UM--Radionavigation-Satellite Mobile Earth Station:** A mobile earth station in the radionavigation-satellite service. (RR)

**EN--Radionavigation-Satellite Space Station:** A space station in the radionavigation-satellite service. (RR)

**ALR--Radio Range Station:** A radionavigation land station in the aeronautical radionavigation service providing radial equisignal zones. (In certain instances a radio range station may be placed on board a ship.)

**SAR--Radiosonde Station:** A station in the meteorological aids service employing a radiosonde.

**SMRG--Radiosonde Ground Station:** A station in the meteorological aids service employing a ground station associated with a radiosonde.

**TE--Satellite EPIRB Station:** A satellite Emergency Position-Indicating Radio Beacon (EPIRB) in the mobile-satellite service. (RR)

**TG--Ship Earth Station:** A mobile earth station in the maritime mobile-satellite service located on board ship. (RR)

**MS--Ship Station:** A mobile station in the maritime mobile service located on board a vessel which is not permanently moored, other than a survival craft station. (RR)

**SN--Sounder Network Station:** A station equipped with an ionosphere sounder used for the real-time selection of frequencies for operational communication circuits.

**SP--Sounder Prediction Station:** A station equipped with an ionosphere sounder for real-time monitoring of upper atmosphere phenomena or to obtain data for the prediction of propagation conditions.

**TT--Space Operation Earth Station:** An earth station in the space operation service. (RR)

**ET--Space Operation Space Station:** A space station in the space operation service. (RR)

**TH--Space Research Earth Station:** An earth station in the space research service. (RR)

**EH--Space Research Space Station:** A space station in the space research service.

**ME--Space Station:** A station located on an object

which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere. (RR) (ME is not used on applications.)

**TD--Space Telecommand Earth Station:** An earth station the emissions of which are used for space telecommand.

**ED--Space Telecommand Space Station:** A space station which receives emissions used for space telecommand.

**TR--Space Telemetry Earth Station:** An earth station which receives emissions used for space telemetry.

**ER--Space Telemetry Space Station:** A space station the emissions of which are used for space telemetry.

**TK--Space Tracking Earth Station:** An earth station which transmits or receives emissions used for space tracking.

**EK--Space Tracking Space Station:** A space station which transmits or receives and retransmits emissions used for space tracking.

**SS--Standard Frequency and Time Signal Station:** A station in the standard frequency and time signal service. (RR)

**EE--Standard Frequency Satellite Space Station:** A space station in the standard frequency satellite service. (RR)

**FLEC--Surface Telemetry Land Station:** A telemetry land station the emissions of which are intended to be received on the surface of the Earth.

**MOEC--Surface Telemetry Mobile Station:** A telemetry mobile station located on the surface of the Earth and the emissions of which are intended to be received on the surface of the Earth.

**ALS--Surveillance Radar Station:** A radionavigation land station in the aeronautical radionavigation service employing radar to display the presence of aircraft within its range. (In certain instances, a surveillance radar station may be placed on board a ship.)

**FAD--Telecommand Aeronautical Station:** A land station in the aeronautical mobile service the emissions of which are used for terrestrial telecommand.

**MAD--Telecommand Aircraft Station:** A mobile station in the aeronautical mobile service the emissions of which are used for terrestrial telecommand.

**FBD--Telecommand Base Station:** A land station in

the land mobile service the emissions of which are used for terrestrial telecommand.

**FCD--Telecommand Coast Station:** A land station in the maritime mobile service the emissions of which are used for terrestrial telecommand.

**FXD--Telecommand Fixed Station:** A fixed station in the fixed service the emissions of which are used for terrestrial telecommand.

**FLD--Telecommand Land Station:** A land station in the mobile service the emissions of which are used for terrestrial telecommand.

**MLD--Telecommand Land Mobile Station:** A mobile station in the land mobile service the emissions of which are used for terrestrial telecommand.

**MOD--Telecommand Mobile Station:** A mobile station in the mobile service the emissions of which are used for terrestrial telecommand.

**MSD--Telecommand Ship Station:** A mobile station in the maritime mobile service the emissions of which are used for terrestrial telecommand.

**FXE--Telemetry Fixed Station:** A fixed station the emissions of which are used for telemetry.

**FLE--Telemetry Land Station:** A land station the emissions of which are used for telemetry.

**MOE--Telemetry Mobile Station:** A mobile station the emissions of which are used for telemetry.

### 6.1.3 Stations (alphabetical by symbols)

1. Where a definition is followed by the parenthetical expression "(RR)," it is an indication that the definition is in the ITU Radio Regulations.

2. The suffix "R" shall be added to the established class of station (STC) symbol only if the station is to be used primarily as a repeater in the bands:

29.89-50.00 MHz (exclusive government bands).  
 138.00-144.00 MHz.  
 148.00-149.90 MHz.  
 150.05-150.80 MHz.  
 162.00-174.00 MHz.  
 406.10-420.00 MHz.

For this purpose, a repeater consists of a radio transmitter, a radio receiver and coupling between the two so as to retransmit unchanged in intelligence the received signal.

3. The following definitions of Stations and associated Station Class (STC) (see Section 9.8.2,

paragraph 15a through 15c) symbols are used on U.S. government frequency assignments as applicable.

**AL--Aeronautical Radionavigation Land Station:** A land station in the aeronautical radionavigation service not intended for use while in motion.

**ALA--Aeronautical Marker Beacon Station:** A radionavigation land station in the aeronautical radionavigation service which employs a marker beacon.

**ALB--Aeronautical Radiobeacon Station:** A radio-beacon station in the aeronautical radionavigation service intended for the benefit of aircraft.

**ALC--Aeronautical Radar Beacon (racon) Station:** A land station in the aeronautical radionavigation service which employs a radar beacon (racon).

**ALG--Glide Path (Slope) Station:** A radionavigation land station which provides vertical guidance to aircraft during approach to landing.

**ALL--Localizer Station:** A radionavigation land station in the aeronautical radionavigation service which employs an Instrument Landing System Localizer.

**ALO--Omnidirectional Range Station:** A radionavigation land station in the aeronautical radionavigation service providing direct indication of the bearing (omnibearing) of that station from an aircraft.

**ALR--Radio Range Station:** A radionavigation land station in the aeronautical radionavigation service providing radial equisignal zones. (In certain instances a radio range station may be placed on board a ship.)

**ALS--Surveillance Radar Station:** A radionavigation land station in the aeronautical radionavigation service employing radar to display the presence of aircraft within its range. (In certain instances, a surveillance radar station may be placed on board a ship.)

**ALTM--Radionavigation Land Test Station (Maintenance Test Facility):** A radionavigation land station in the aeronautical radionavigation service which is used as a radionavigation calibration station for the transmission of essential information in connection with the testing and calibration of aircraft navigational aids, receiving equipment and interrogators at predetermined surface locations. The primary purpose of this facility is to permit maintenance testing by aircraft radio service personnel.

**ALTO--Radionavigation Land Test Station (Operational Test Facility):** A radionavigation land station in the aeronautical radionavigation service



which is used as a radionavigation calibration station for the transmission of essential information in connection with the testing and calibration of aircraft navigational aids, receiving equipment and interrogators at predetermined surface locations. The primary purpose of this facility is to permit the pilot to check a radionavigation system aboard the aircraft prior to takeoff.

**AM--Aeronautical Radionavigation Mobile Station:** A mobile station in the aeronautical radionavigation service intended to be used while in motion or during halts at unspecified points.

**AMA--Altimeter Station:** A radionavigation mobile station in the aeronautical radionavigation service which employs a radio altimeter.

**AX--Aeronautical Fixed Station:** A station in the aeronautical fixed service. (RR)

**BC--Broadcasting Station (sound):** A station (sound) in the broadcasting service. (RR)

**BT--Broadcasting Station (television):** A station (television) in the broadcasting service. (RR)

**EB--Broadcasting-Satellite Space Station (sound broadcasting):** A space station in the broadcasting-satellite service (sound broadcasting). (RR)

**DGP--Differential-Global-Positioning-System (DGPS) Station:** a terrestrial station used for the transmission of differential correction information to DGPS receivers aboard aircraft for navigation.

**EC--Fixed-Satellite Space Station:** A space station in the fixed-satellite service. (RR)

**ED--Space Telecommand Space Station:** A space station which receives emissions used for space telecommand. (RR)

**EE--Standard Frequency Satellite Space Station:** A space station in the standard frequency satellite service. (RR)

**EF--Radiodetermination-Satellite Space Station:** A space station in the radiodetermination-satellite service. (RR)

**EG--Maritime Mobile-Satellite Space Station:** A space station in the maritime mobile-satellite service. (RR)

**EH--Space Research Space Station:** A space station in the space research service. (RR)

**EI--Mobile-Satellite Space Station:** A space station in the mobile-satellite service. (RR)

**EJ--Aeronautical Mobile-Satellite Space Station:** A space station in the aeronautical mobile-satellite

service. (RR)

**EK--Space Tracking Space Station:** A space station which transmits or receives and retransmits emissions used for space tracking.

**EM--Meteorological-Satellite Space Station:** A space station in the meteorological-satellite service. (RR)

**EN--Radionavigation-Satellite Space Station:** A space station in the radionavigation-satellite service. (RR)

**EO--Aeronautical Radionavigation-Satellite Space Station:** A space station in the aeronautical radionavigation-satellite service. (RR)

**EQ--Maritime Radionavigation-Satellite Space Station:** A space station in the maritime radionavigation-satellite service. (RR)

**ER--Space Telemetry Space Station:** A space station the emissions of which are used for space telemetry.

**ES--Inter-Satellite Space Station:** A space station in the inter-satellite service. (RR)

**ET--Space Operation Space Station:** A space station in the space operation service. (RR)

**EU--Land Mobile-Satellite Space Station:** A space station in the land mobile-satellite service. (RR)

**EV--Broadcasting-Satellite Space Station (television):** A space station in the broadcasting-satellite service (television). (RR)

**EW--Earth Exploration-Satellite Space Station:** A space station in the Earth exploration-satellite service. (RR)

**EX--Experimental Station:** A station utilizing radio waves in experiments with a view to development of science or technique. (RR) (EX is not used on applications.)

**FA--Aeronautical Station:** A land station in the aeronautical mobile service. In certain instances, an aeronautical station may be located, for example on board ship or on a platform at sea. (RR)

**FAB--Aeronautical Broadcast Station:** An aeronautical station which makes scheduled broadcasts of meteorological information and notices to airmen. (In certain instances, an aeronautical broadcast station may be placed on board a ship.)

**FAC--Airdrome Control Station:** An aeronautical station providing communication between an airdrome control tower and aircraft.

**FAD--Telecommand Aeronautical Station:** A land station in the aeronautical mobile service the emissions of which are used for terrestrial telecommand.

**FAT--Flight Test Station:** An aeronautical station used for the transmission of essential communications in connection with the testing of aircraft or major components of aircraft.

**FB--Base Station:** A land station in the land mobile service. (RR)

**FBD--Telecommand Base Station:** A land station in the land mobile service the emissions of which are used for terrestrial telecommand.

**FC--Coast Station:** A land station in the maritime mobile service. (RR)

**FCB--Marine Broadcast Station:** A coast station which makes scheduled broadcast of time, meteorological, and hydrographic information.

**FCD--Telecommand Coast Station:** A land station in the maritime mobile service the emissions of which are used for terrestrial telecommand.

**FD--Aeronautical Station (R):** An aeronautical station in the aeronautical mobile (R) service. (RR)

**FG--Aeronautical Station (OR):** An aeronautical station in the aeronautical mobile (OR) service. (RR)

**FL--Land Station:** A station in the mobile service not intended to be used while in motion. (RR)

**FLD--Telecommand Land Station:** A land station in the mobile service the emissions of which are used for terrestrial telecommand.

**FLE--Telemetry Land Station:** A land station the emissions of which are used for telemetry.

**FLEA--Aeronautical Telemetry Land Station:** A telemetry land station used in the flight testing of manned or unmanned aircraft, missiles, or major components thereof.

**FLEB--Flight Telemetry Land Station:** A telemetry land station the emissions of which are used for telemetry to a balloon; to a booster or rocket, excluding a booster or rocket in orbit about the Earth or in deep space; or to an aircraft, excluding a station used in the flight testing of an aircraft.

**FLEC--Surface Telemetry Land Station:** A telemetry land station the emissions of which are intended to be received on the surface of the Earth.

**FLH--Hydrologic and Meteorological Land Station:** A land station the emissions of which are used for the automatic transmission of either

hydrologic or meteorological data, or both.

**FLU--Aeronautical Utility Land Station:** A land station located at airdrome control towers and used for control of ground vehicles and aircraft on the ground at airdromes.

**FP--Port Station:** A coast station in the port operations service. (RR)

**FX--Fixed Station:** A station in the fixed service. (RR)

**FXD--Telecommand Fixed Station:** A fixed station in the fixed service the emissions of which are used for terrestrial telecommand.

**FXE--Telemetry Fixed Station:** A fixed station the emissions of which are used for telemetry.

**FXH--Hydrologic and Meteorological Fixed Station:** A fixed station the emissions of which are used for the automatic transmission of either hydrologic or meteorological data, or both.

**LR--Radiolocation Land Station:** A station in the radiolocation service not intended to be used while in motion. (RR)

**MA--Aircraft Station:** A mobile station in the aeronautical mobile service other than a survival craft station, located on board an aircraft. (RR)

**MAD--Telecommand Aircraft Station:** A mobile station in the aeronautical mobile service the emissions of which are used for terrestrial telecommand.

**MAP--Portable Aircraft Station:** A portable station operating in the aeronautical mobile service.

**ME--Space Station:** A station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere. (RR) (ME is not used on applications.)

**ML--Land Mobile Station:** A mobile station in the land mobile service capable of surface movement within the geographical limits of a country or continent. (RR)

**MLD--Telecommand Land Mobile Station:** A mobile station in the land mobile service the emissions of which are used for terrestrial telecommand.

**MLP--Portable Land Mobile Station:** A portable station operating in the land mobile service.

**MO--Mobile Station:** A station in the mobile service intended to be used while in motion or during halts at unspecified points. (RR)

**MOB--Radio Beacon Mobile Station:** A mobile station the emissions of which are used to determine

its location.

**MOD--Telecommand Mobile Station:** A mobile station in the mobile service the emissions of which are used for terrestrial telecommand.

**MOE--Telemetry Mobile Station:** A mobile station the emissions of which are used for telemetry.

**MOEA--Aeronautical Telemetry Mobile Station:** A telemetry mobile station used for transmitting data directly related to the airborne testing of the vehicle, (or major components), on which the station is installed.

**MOEB--Flight Telemetry Mobile Station:** A telemetry mobile station used for transmitting data from an airborne vehicle, excluding data related to airborne testing of the vehicle itself, (or major components thereof).

**MOEC--Surface Telemetry Mobile Station:** A telemetry mobile station located on the surface of the Earth and the emissions of which are intended to be received on the surface of the Earth.

**MOH--Hydrologic and Meteorological Mobile Station:** A mobile station the emissions of which are used for the automatic transmission of either hydrologic or meteorological data, or both.

**MOP--Portable Mobile Station:** A portable station operating in the mobile service.

**MOU--Aeronautical Utility Mobile Station:** A mobile station used for communication at airdromes with the aeronautical utility land station, the airdrome control station, the FAA flight service station, ground vehicles, and aircraft on the ground. (All transmissions shall be subject to the control of the airdrome control station and shall be discontinued immediately when so requested by the airdrome control operators.)

**MR--Radiolocation Mobile Station:** A station in the radiolocation service intended to be used while in motion or during halts at unspecified points. (RR)

**MRP--Portable Radiolocation Station:** A portable station operating in the radiolocation service.

**MS--Ship Station:** A mobile station in the maritime mobile service located on board a vessel which is not permanently moored, other than a survival craft station. (RR)

**MSD--Telecommand Ship Station:** A mobile station in the maritime mobile service the emissions of which are used for terrestrial telecommand.

**MSP--Portable Ship Station:** A portable station

operating in the maritime mobile service.

**NL--Maritime Radionavigation Land Station:** A land station in the Maritime Radionavigation Service not intended for use while in motion.

**NLC--Maritime Radar Beacon (racon) Station:** A land station in the maritime radionavigation service which employs a radar beacon (racon).

**NLM--Marine Radiobeacon Station:** A radiobeacon station in the maritime radionavigation service intended for the benefit of ships.

**NR--Radionavigation Mobile Station:** A station in the radionavigation service intended to be used while in motion or during halts at unspecified points. (RR)

**OD--Oceanographic Data Station:** A station in the maritime mobile service located on a ship, buoy or other sensor platform the emissions of which are used for the transmission of oceanographic data.

**OE--Oceanographic Data Interrogating Station:** A station in the maritime mobile service the emissions of which are used to initiate, modify, or terminate functions of equipment directly associated with an oceanographic data station, including the station itself.

**RA--Radio Astronomy Station:** A station in the radio astronomy service. (RR) (This is always a receiving station.)

**RG--Radio Direction-Finding Station:** A radio-determination station using radio direction-finding. (RR)

**RN--Radionavigation Land Station:** A station in the radionavigation service not intended to be used in motion. (RR)

**RNL--Loran Station:** A long distance radionavigation land station transmitting synchronized pulses. Hyperbolic lines of position are determined by the measurement of the difference in the time of arrival of these pulses.

**SA--Meteorological Aids Mobile Station:** A mobile station in the meteorological aids service intended to be used while in motion or during halts at unspecified points.

**SAR--Radiosonde Station:** A station in the meteorological aids service employing a radiosonde.

**SM--Meteorological Aids Base Station:** A land station in the meteorological aids service not intended for use while in motion.

**SMB--Radar Beacon Precipitation Gage Station:** A transponder station in the meteorological aids service, the emissions of which are used for telemetry.

**SMD--Meteorological Radar Station:** A station in the meteorological aids service employing radar.

**SMRG--Radiosonde Ground Station:** A station in the meteorological aids service employing a ground station associated with a radiosonde.

**SN--Sounder Network Station:** A station equipped with an ionosphere sounder used for the real-time selection of frequencies for operational communication circuits.

**SP--Sounder Prediction Station:** A station equipped with an ionosphere sounder for real-time monitoring of upper atmosphere phenomena or to obtain data for the prediction of propagation conditions.

**SS--Standard Frequency and Time Signal Station:** A station in the standard frequency and time signal service. (RR)

**TB--Aeronautical Earth Station:** An earth station in the fixed-satellite service or in some cases in the aeronautical mobile-satellite service located at a specified fixed point on land to provide a feeder link for the aeronautical mobile-satellite service. (RR)

**TC--Fixed-Satellite Earth Station:** An earth station in the fixed-satellite service. (RR)

**TD--Space Telecommand Earth Station:** An earth station the emissions of which are used for space telecommand.

**TE--Satellite EPIRB Station:** A satellite Emergency Position-Indicating Radio Beacon (EPIRB) in the mobile-satellite service (RR).

**TF--Radiodetermination-Satellite Earth Station:** A fixed earth station in the radiodetermination-satellite service. (RR)

**TG--Ship Earth Station:** A mobile earth station in the maritime mobile-satellite service located on board ship. (RR)

**TH--Space Research Earth Station:** An earth station in the space research service. (RR)

**TI--Coast Earth Station:** An earth station in the fixed-satellite service or in some cases in the maritime mobile-satellite service located at a specified fixed point on land to provide a feeder link for the maritime mobile-satellite. (RR)

**TJ--Aircraft Earth Station:** A mobile earth station in the aeronautical mobile-satellite service located on board an aircraft. (RR)

**TK--Space Tracking Earth Station:** An earth station which transmits or receives emissions used for

space tracking.

**TL--Radiodetermination-Satellite Mobile Earth Station:** A mobile earth station in the radiodetermination-satellite service. (RR)

**TM--Meteorological-Satellite Earth Station:** An earth station in the meteorological-satellite service. (RR)

**TN--Radionavigation-Satellite Fixed Earth Station:** A fixed earth station in the radionavigation-satellite service. (RR)

**TO--Aeronautical Radionavigation-Satellite Mobile Earth Station:** A mobile earth station in the aeronautical radionavigation-satellite service. (RR)

**TP--Earth Station (receiving):** An earth station used for receiving. (RR) (TP is not used on applications.)

**TQ--Maritime Radionavigation-Satellite Mobile Earth Station:** A mobile earth station in the maritime radionavigation-satellite service. (RR)

**TR--Space Telemetry Earth Station:** An earth station which receives emissions used for space telemetry.

**TT--Space Operation Earth Station:** An earth station in the space operation service. (RR)

**TU--Land Mobile Earth Station:** A mobile earth station in the land mobile-satellite service capable of surface movement within the geographical limits of a country or continent. (RR)

**TW--Earth Exploration-Satellite Earth Station:** An earth station in the Earth exploration-satellite service. (RR)

**TX--Maritime Radionavigation-Satellite Earth Station:** A fixed earth station in the maritime radionavigation-satellite service. (RR)

**TY--Base Earth Station:** An earth station in the fixed-satellite service or in some cases in the land mobile-satellite service located at a specified point or within a specified area on land to provide a feeder link for the land mobile-satellite service. (RR)

**TZ--Aeronautical Radionavigation-Satellite Earth Station:** A fixed earth station in the aeronautical radionavigation-satellite service. (RR)

**UA--Mobile Earth Station:** An earth station in the mobile-satellite service intended to be used while in motion or during halts at unspecified points. (RR)

**UM--Radionavigation-Satellite Mobile Earth Station:** A mobile earth station in the radionavigation-satellite service. (RR)

**VA--Land Earth Station:** An earth station in the

fixed-satellite service or in some cases in the mobile-satellite service located at a specified point or within a specified area on land to provide a feeder link for the mobile-satellite service. (RR)

**XC--Experimental Contract Developmental Station:** An experimental station used for the evaluation or testing under Government contract of electronics equipment or systems in a design or development stage.

**XD--Experimental Developmental Station:** An experimental station used for evaluation or testing of electronics equipment or systems in a design or development stage.

**XE--Experimental Export Station:** An experimental station intended for export and used for the evaluation or testing of electronics equipment or systems in the design or development stage.

**XM--Experimental Composite Station:** An experimental station used in experimental operations of a complex nature not readily specified or used in an operation which is a composite of two or more of the established experimental categories.

**XR--Experimental Research Station:** An experimental station used in basic studies concerning scientific investigation looking toward the improvement of the art of radiocommunications.

**XT--Experimental Testing Station:** An experimental station used for the evaluation or testing of electronics equipment or systems, including site selection and transmission path surveys, which have been developed for operational use.

Class (STC) symbol (see Section 9.8.2, paragraph 15a through 15c) to be used versus the *Service* in which the transmitting station will operate. Frequency bands are allocated to Service(s) based upon the U.S. Government Table of Frequency Allocations (see Section 4.1.3).

#### 6.1.4 Table of Services, Station Classes, and Stations

Table A is used to determine the proper Station

**TABLE A**

Table of Services, Station Classes, and Stations

Service	Station Class	Station
1. Amateur	None	Amateur
2. Broadcasting	BC BT	Broadcasting (sound) Broadcasting (television)
3. Broadcasting-Satellite	EB EV	Space (sound) Space (television)
4. Earth Exploration-Satellite	EW TW	Space Earth

Service	Station Class	Station
<i>Meteorological-Satellite</i>	EM TM	Space Earth
<b>5. Fixed</b>	FX FXD FXE FXH	Fixed Telecommand Fixed Telemetry Fixed Hydrologic and Meteorological Fixed
<i>Aeronautical Fixed</i>	AX	Aeronautical Fixed
<b>6. Fixed-Satellite</b>	EC TC VA TB TI TY	Space Earth Land Earth Earth Coast Earth Base Earth
<b>7. Inter-Satellite</b>	ES	Space
<b>8. Meteorological Aids</b>	SA SAR SM SMB SMD SMRG	Meteorological Aids Mobile Station Radiosonde Meteorological Aids Base Station Radar Beacon Precipitation Gage Meteorological Radar Radiosonde Ground
<b>9. Mobile</b>	FL FLD FLE FLEA FLEB FLEC FLH FLU MO MOB MOD MOE MOEA MOEB MOEC MOH MOP MOU	Land Telecommand Land Telemetry Land Aeronautical Telemetry Land Flight Telemetry Land Surface Telemetry Land Hydrologic and Meteorological Land Aeronautical Utility Land Mobile Radio Beacon Mobile Telecommand Mobile Telemetry Mobile Aeronautical Telemetry Mobile Flight Telemetry Mobile Surface Telemetry Mobile Hydrologic and Meteorological Mobile Portable Mobile Aeronautical Utility Mobile
<i>Aeronautical Mobile</i>	FA FAB FAC FAD FAT MA MAD MAP	Aeronautical Aeronautical Broadcast Airdrome Control Telecommand Aeronautical Flight Test Aircraft Telecommand Aircraft Portable Aircraft
<i>Aeronautical Mobile (OR)</i>	FG	Aeronautical
<i>Aeronautical Mobile (R)</i>	FD	Aeronautical
<i>Land Mobile</i>	FB FBD ML MLD MLP	Base Telecommand Base Land Mobile Telecommand Land Mobile Portable Land Mobile

Service	Station Class	Station
<i>Maritime Mobile</i>	FC FCB FCD MS MSD MSP OD OE	Coast Marine Broadcast Telecommand Coast Ship Telecommand Ship Portable Ship Oceanographic Data Oceanographic Data Interrogating
<b>10. Mobile-Satellite</b>	UA TE EI VA	Mobile Earth Satellite EPIRB Space Land Earth
<i>Aeronautical Mobile-Satellite</i>	EJ TB TJ	Space Earth Aircraft Earth
<i>Land Mobile-Satellite</i>	EU TU TY	Space Land Mobile Earth Base Earth
<i>Maritime Mobile-Satellite</i>	EG TG TI	Space Ship Earth Coast Earth
<b>11. Radio Astronomy</b>	RA	Radio Astronomy
<b>12. Radiodetermination</b>	None RG	Radiodetermination Radio Direction-Finding
<i>Radiolocation</i>	LR MR MRP	Land Mobile Portable
<i>Radionavigation</i>	NR RNL RN	Mobile LORAN Land
Aeronautical Radionavigation	AL ALA ALB ALC ALG ALL ALO ALR ALS ALTM ALTO AM AMA	Land Marker Beacon Radio Beacon Radar Beacon (Racon) Glide Path (Slope) Localizer Omnidirectional Range Radio Range Surveillance Radar Land Test (Maintenance) Land Test (Operational) Mobile Altimeter
Maritime Radionavigation	NL NLC NLM	Land Radar Beacon (Racon) Marine Radio Beacon
<b>13. Radiodetermination-Satellite</b>	EF TF TL	Space Earth Mobile Earth
<i>Radionavigation-Satellite</i>	EN TN UM	Space Fixed Earth Mobile Earth
Aeronautical Radionavigation-Satellite	EO TO TZ	Space Mobile Earth Earth

Service	Station Class	Station
Maritime Radionavigation-Satellite	EQ TQ TX	Space Mobile Earth Earth
<b>14. Space Operation</b>	ET TT	Space Earth
<b>15. Space Research</b>	EH TH	Space Earth
<b>16. Standard Frequency and Time Signal</b>	SS	Standard Frequency and Time Signal
<b>17. Standard Frequency and Time Signal-Satellite</b>	EE	Space
<b>18. No Specific Service</b>	DGP ED EK ER SN SP TD TK TR XC XD XE XM XR XT	Differential-Global-Positioning-System Space Telecommand Space Space Tracking Space Space Telemetry Space Sounder Network Sounder Prediction Space Telecommand Earth Space Tracking Earth Space Telemetry Earth Experimental Contract Developmental Experimental Developmental Experimental Export Experimental Composite Experimental Research Experimental Testing

## 6.2 FREQUENCY NOMENCLATURE

The terms "allocation," "allotment," and "assignment" are used to describe the distribution of frequencies or bands of frequencies. Allocations are made to radio services, for example, the fixed service, the aeronautical mobile service, and the space research service. Allotments are made to areas or countries and, within the U.S. Government, to specific uses. Assignments are instruments of authorization of discrete frequencies to specific radio stations.

In the application of the provisions of this Manual, letters or numbers shall not be used to designate specific bands of frequencies, e.g., S-band, X-band, Ku-band. Such designations create confusion, because the band limits vary from one designator system or user group to another. This can be avoided by using the international system of citing in Hertz the actual numerical limits of specific frequency bands. Further, broader portions of the spectrum can be described by the following internationally adopted terms:

### Frequency Subdivision    Frequency Range

VLF (very low)	3 kHz to 30 kHz
LF (low)	30 kHz to 300 kHz
MF (medium)	300 kHz to 3000 kHz
HF (high)	3 MHz to 30 MHz
VHF (very high)	30 MHz to 300 MHz
UHF (ultra high)	300 MHz to 3000 MHz
SHF (super high)	3 GHz to 30 GHz
EHF (extremely high)	30 GHz to 300 GHz 300 GHz to 3000 GHz

Hz=hertz=cycles per second

k=kilo ( $10^3$ )

M=Mega ( $10^6$ )

G=giga ( $10^9$ )

T=tera ( $10^{12}$ )

## 6.3 EMISSION DESIGNATORS

Emissions are designated according to their classification and their necessary bandwidth.

### 6.3.1 Classification of Emissions

Emissions are classified according to the type of



modulation of the main carrier, the nature of signal(s) modulating the main carrier, and the type of information to be transmitted (see paragraph 16, Section 9.8.2 of this Manual). For a more complete description of an emission, two optional characteristics can be added; these are the details of signal(s) and the nature of multiplexing.

### 6.3.2 Necessary Bandwidth

1. Whenever the full designation of an emission is necessary, the symbol for that emission shall be preceded by a number indicating the necessary bandwidth of the emission.

2. See Annex J for methods used to determine necessary bandwidth and the relationship between occupied and necessary bandwidth. The value so determined shall be used when the full designation of an emission is required. However, the necessary bandwidth so determined is not the only characteristic of an emission to be considered in evaluating the interference that may be caused by that emission.

## 6.4 CLASSES OF EXPERIMENTAL STATIONS

Experiments, experimental operations and experimental activities as used herein refer to the utilization of radio waves in experiments with a view to the development of the science or technique of radio communication.

The classes of experimental stations included in Section 6.1.3 were adopted to allow more precise classification of experimental operations and to provide the means of identifying stations used in support of experimental activities. Two classes normally used by non-Government services (XC and XE) are included for completeness.

The broad class EX has been included for its parent definition, but it is not used in making frequency assignments. However, an experimental composite station (XM) has been included. It is the appropriate class for the composite or not-elsewhere-classified type of operation and is used only in those instances where the other classes are not applicable. When it is used, an explanation of the experimental operation must be included on the

frequency application under Supplementary Details.

An experimental developmental station (XD) may be used for radiation measurements of a transmitter which is a prototype not yet in production or to determine radiation patterns of new antenna design.

While the classes included in section 6.1.3 provide a rather precise description of experimental stations, appropriate S-notes and informative remarks can be shown on frequency applications to further describe the intent or special nature of the proposed experimental operation.

Experimental classes of stations shall be on a secondary basis to stations of all other services and shall be authorized only by a temporary assignment; however, a space project assignment may be used to authorize a) an experimental station to be operated in the manner of a station in the space service, and b) an experimental station to be used for the static test (prelaunch ground-to-ground checkout) of space communication equipment.

## 6.5 CALL SIGNS

### 6.5.1 International Provisions

The international provisions concerning the identification of transmissions of radio stations are contained in Article S19 of the ITU Radio Regulations, 1984 edition.

### 6.5.2 Use of Call Signs

While Government agencies, users of radio, are required to comply with the aforementioned ITU Radio Regulations, the following procedure is the recommended practice where applicable in the conduct of operations in the types of services indicated:

#### *Fixed and Land*

Each station shall transmit its assigned call sign on each frequency in use at the beginning and end of operation, and at least once an hour. More frequent identification may be made if delay to traffic will not result.

Radiotelephony transmissions shall be identified by speaking the words "THIS IS" followed by the

letters or alpha-numeric combination of the call sign; or by means of an automatic identifier transmitting in International Morse Code in the prosign, "DE" followed by the call sign. When an automatic identifier is used, it will be programmed to identify the station once every 30 minutes.

Radiotelegraphy transmissions shall be identified by sending in international morse code the prosign "DE" followed by the call sign.

Radioteletype transmissions shall be identified by transmitting the prosign "DE" followed by the call sign, in teletype characters.

Facsimile transmissions shall be identified by any one of the preceding methods after removing the facsimile signal. Pictures need not be interrupted to comply with the hourly identification.

Twin-channel single sideband circuits employing telephony on one or both channels shall be identified through the use of radiotelephony identification procedures on either channel.

Circuits employing single or multiple tone modulation shall be identified through the use of tone modulated telegraphy on at least one channel employing the procedure described under radiotelegraphy transmissions.

### *Mobile*

A mobile station associated with a base station which transmits only on the transmitting frequency of the associated base station is not required to transmit any identification.

A mobile station which transmits on any frequency other than the transmitting frequency of the associated base station, or which has no associated base station, shall transmit the required identification at the end of each transmission or exchange of transmission or once each hour of the operating period.

Identification procedures shall be those set forth for the fixed service.

A mobile station in the maritime mobile service is subject to the applicable provisions of the ITU Radio Regulations and all other international agreements in force to which the United States is a party.

### *Automatic Morse Equipment*

Automatically activated equipment may be used to identify radiotelephone stations by the International Morse Code providing the following conditions are met:

(1) The signal output of the automatic identification equipment shall be connected to the transmitter at the microphone input or any other manufacturer provided signal input terminal and shall be adjusted to produce  $40\% \pm 10\%$  of the maximum permissible modulation/deviation level. This adjustment shall be performed when all other modulating signals are absent.

(2) The Morse Code transmission rate shall be maintained between 20 and 25 words per minute.

(3) The frequency of the keyed tone comprising the identification signal shall be  $1200 \text{ Hz} \pm 800 \text{ Hz}$ .

### *Miscellaneous*

Stations which are entirely automatic in their operation such as telemetering, hydrological and weather reporting, and aeronautical instrumentation, are exempt from these requirements.

Stations employing complex systems which require special terminal equipment for normal reception of traffic will, so far as practicable, identify at least hourly.

## **6.5.3 Obtaining Call Signs**

Section 305(c) of the Communications Act of 1934, as amended, provides that, "All stations owned and operated by the United States, except mobile stations of the Army of the United States, and all other stations on land and sea, shall have special call letters designated by the Commission."

Call signs to be used for the identification of transmissions of radio stations may be obtained by communicating with the Secretary, Federal Communications Commission, Washington, D.C. 20554.

## **6.6 MARITIME SERVICE IDENTITIES**

Under the ITU Radio Regulations (RR 2083), ship stations and ship earth stations to which the provisions of Chapter XI and coast stations or coast

earth stations capable of communicating with such ships shall have assigned to them maritime mobile service identities, as the need arises. The maritime identities consist of a code, the Maritime ID, or MID, which is assigned to ships and coast stations, internationally, in accordance with RR Appendix 43. Certain blocks of codes are assigned to each administration which then are assigned by the administration to its ships and coast stations. In the United States the Federal Communications Commission will be the responsible agency for the maritime mobile satellite calling, in some cases.

assignment of MID codes. MID codes are used as unique addresses for digital selective calling and

**Endnotes for Chapter 6**

1. The terms "permissible interference" and "accepted interference" are used in the coordination of frequency assignments between administrations. (RR)
2. (OR): off-route (RR)
3. (R): route (R).
4. In general, duplex operation and semi-duplex operation require two frequencies in radiocommunications; simplex operation may use either one or two.(RR)
5. According to Section 706, a war emergency may be proclaimed as a result of:
  - (1) war,
  - (2) threat of war,
  - (3) a state of public peril,
  - (4) disaster,
  - (5) other national emergency, or
  - (6) to preserve the neutrality of the United States.

**(Last Page in Chapter 6)**